

Docket No. CREO-004
US App. No. 10/797,816

REMARKS

Status of the Application

All pending claims 1-6 were rejected under 35 USC 102(e) as being anticipated by Nakamura et al. (US 6,891,342).

Applicant has amended claims 1 and 4, and added new claim 7. No new matter adds through the amendments. For the reasons discussed below, withdrawal of the rejection is requested.

Claim Rejections- 35 U.S.C. 102(e)

Claims 1-6 were rejected under 35 USC 102(e) as being anticipated by Nakamura et al. (US 6,891,342).

Applicant respectfully traverses the rejection for reasons discussed below. Nevertheless, Applicant has amended claims 1 and 4 to more clearly define the present invention.

Claim 1 is amended to specifically recite that "the phase difference between the first PWM signals and the second PWM signals is configured to be changed according to the duty set by the duty setting portion". Nakamura fails to teach or suggest such features.

Because the present invention changes the phase difference between two PWM signals according to the duty of the PWM signals, the present invention can solve the problem that an amount of generation of an electromagnetic noise fluctuates corresponding to the duty in a case that a phase difference between the two PWM signals is set to be constant, as discussed in paragraph [0005] of the originally filed specification. Thereby, the present invention possesses an advantageous effect that the electromagnetic noise decreases throughout the entire range of the duties.

The cited reference of Nakamura et al. (US6,891,342) describes, in column 6, line 56 to column 7, line 51 for example, that a phase between carrier signals and a phase between PWM control signals are changed with a specific amount by a phase processing section 35 to match a rising edge and a falling edge of the PWM signals. However, Nakamura et al. does not teach or suggest that the phase between the PWM signals is changed according to the duty. The cited reference therefore cannot solve the above-mentioned problem and attain the advantageous effect of the invention.

In addition, as shown in FIG. 2 of Nakamura, since information from the input signal

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processing section 34 (i.e. PWM information such as duty) is not inputted into the phase shift section 35b which changes the phase of the carrier signals, it is clear that the PWM information is not utilized in Nakamura et al. as to how much the phase of the carrier signals is to be shifted. Therefore, Nakamura et al. never disclose or suggest the claimed invention recited in claim 1.

Furthermore, Nakamura specifically teaches that “[B]y establishing such a phase relationship between the two PWM control signals, it is ensured that the two switching elements can never be simultaneously set in the on state.” Col. 4, lines 7-9. While in the present invention as defined in claim 1, the two switching elements can be simultaneously set in the on state when the phase difference changes with the duty. Figs. 3A-3D show such situation when the duty (D) is 75%. This shows that Nakamura teaches away from the present invention.

Amended claim 4 now recites that “the first PWM signals and the second PWM signals are generated such that falling timing of one of the first PWM signals and the second PWM signals and rising timing of the other of the first PWM signals and the second PWM signals coincide with each other”. The cited reference of Nakamura et al. does not teach or suggest this feature that a saw-tooth wave patterned carrier signals are reversed by a reverser to generate two PWM signals in which rising timing and falling timing thereof are matched to each other.

According to this structure, it is possible to simplify a circuit structure because only one carrier signal generator is required, and to generate the first and the second PWM signals with the phase difference which corresponds to the duty of the PWM signals by providing the carrier signals having the saw-tooth wave pattern.

For at least the reasons discussed above, Nakamura cannot anticipate claims 1 and 4. Withdrawal of the rejection is requested. For at least the same reasons, dependent claims 2-3, and 5-6 cannot be anticipated by Nakamura.

Furthermore, these dependent claims contain features that further distinguish over the cited art. For example, claims 2 and 3 recited specific formulas to calculate phase difference according to the duty.

In rejecting claims 2 and 3, the Office Action alleged that “since Nakamura et al. disclose the duty factor calculation as shown in figure 5 of the description, it is inherent to calculate the phase difference as recited in claims 2 and 3.” Applicant respectfully disagrees.

The Applicant respectfully submits that no objective evidence or cogent technical reasoning is provided in the Office Action to support the conclusion of inherency. As stated in

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Ex parte Levy, 17 USPQ2d 1461, 1464 (B.P.A.I. 1990):

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art."

It is stated in *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991):

"To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.""

"Inherency, however, may not be established by probability or possibility. The mere fact that a certain thing may result from a given set of circumstances is not sufficient."

Clearly, the formula recited in claims 2 and 3 do not necessarily flow from the teachings of Nakamura. Therefore, the conclusion of inherency is improper.

New Claim

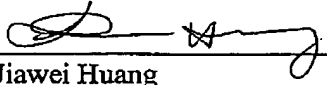
New claim 7 is added, which depends on claim 1 and, thus, is believed patentable.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all pending claims 1-7 are now in condition for allowance. Allowance of this application is earnestly solicited.

Respectively submitted
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